

Original Research Article

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Prevalence of Intestinal Parasites at a Tertiary Care Centre at Dehradun, Uttarakhand, India

Rajender Singh*, R.K. Aggarwal and Nupur Koul

Department of Microbiology, HIMS, SRHU, Dehradun, Uttarakhand, India

*Corresponding author:

ABSTRACT

Keywords

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Among various intestinal infections, parasites always contributing higher burden world wide, especially in low socio-economic countries; and accounts for a major cause of morbidity and mortality among different high risk group. To find out the prevalence of intestinal parasitic infections among patients attending various OPDs in Himalayan Institute of Medical sciences, a tertiary care center in Dehradun, UK. Stool sample collected from suspected patients visiting various OPDs in the hospital subjected to routine iodine and normal saline wet mount examination after Formol ether concentration technique. Out of total 1078 stool from suspected patients, 53(4.9%) stool sample were positive; among which male were more predominantly affected than female and most common age group affected were from 30-39 years old and most common isolates were *Giardia* and *Entamoeba* species. The prevalence of our study is 4.91% among suspected patients visiting the tertiary care centre in Dehradun district Uttarakhand.

Introduction

Among various intestinal infections, parasites always contributing higher burden worldwide, especially in low socio-economic countries; and accounts for a major cause of morbidity and mortality among different high risk group (1). Age, sex, geography and other socio-demographic factors also affects the incidence and frequency of gastrointestinal parasite (2). More than 1.5 billion people, or 24% of the world's population, are infected with soil-transmitted helminth infections worldwide. Infections are widely distributed in tropical

and subtropical areas, with the greatest numbers occurring in sub-Saharan Africa, the Americas, China and East Asia (3). In India, prevalence of intestinal parasites ranges from 5.56% to 90 % as reported by different studies (4-9).

Intestinal parasites rarely caused death but have serious hazards on health and nutritional status of the patients (10, 11), along with serious impact over physical, mental & finally socioeconomic development of children (12, 13). Helminths such as *Ascaris lumbricoides*, hookworm, *Enterobius vermicularis* and

protozoa like *Entamoeba histolytica* and *Giardia lamblia* are some of the common intestinal parasites responsible for considerable morbidity in young and adult population (14). Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Jolly Grant, is the referral tertiary care center covering populations of major cities like Dehradun, Rishikesh, Haridwar & hilly areas of Uttarakhand. The objective of our study to know the magnitude and socio-demographic factors affecting the prevalence of intestinal parasite among the patients attending a tertiary care center in and around Dehradun area.

Materials and Methods

Our study was hospital based study of two and a half period (Jan 2017 to April 2019) carried out in parasitology section of department of microbiology, HIMS, SRHU, Jolly Grant, situated at the outskirts of Dehradun city in Uttarakhand state.

A total number of 1078 stool sample received from the patients visited different OPD of the hospital with suspecting complaint of diarrhea or dysentery along with various complications along with relevant history. Patient under anti-helminthic drug treatment was excluded from the study group. The stool samples which were received in parasitology lab examined macroscopically for presence of adult worms or their body segments and other characteristics like color, odor, presence of blood and mucus; and also examined microscopically after preparation of iodine and normal saline wet mount of concentrated stool specimen (Formal ether concentration technique).

Results and Discussion

A total of 1078 patients visited in OPD suspected for intestinal parasites send with their stool sample to parasitology lab for

routine examination. Out of which 53(4.91 %) stool samples were found positive for intestinal parasite in wet mount preparation of stool (Table 1). 43(81.13%) males were found positive while 13(24.53%) stool were positive in females (Table 2). We also found in our study that maximum number of positive stool i.e. 12(22.64%) were found in the age group of 30-39 year old followed by 9 stool (16.98%) from the age group of 40-49 year old (Table 3).

In our study, *Giardia lamblia* was found most common intestinal parasite in 20 number of stool i.e 37.74 % followed by *Blastocystis hominis* (18.87%) and *Entamoeba histolytica* (9.44%). 5 mixed cases were also found positive in stool wet mount examination (Table 4).

In our study we also found that 36 patients (67.9%) having positive stool were associated with mild anemia, followed by 7(13.20%), 5(9.43%) and 5(9.43%) cases were associated with moderate, severe and life threatening anemia respectively (Table 5).

Gold standard test for intestinal parasitic infection were always stool examination. Misinterpretations of intestinal parasitic infection as appendicitis and other inflammatory bowel diseases are common due to lack of knowledge of load of parasites in that particular geographical area. In our hospital based stud; we found 4.91% prevalence of intestinal parasites in and around Dehradun city which similar to other few studies from Surat, Gujrat, Rohtak, Haryana showed less than 10 % prevalence rate. This low prevalence rate might be due to increasing awareness for proper hygiene, improved sanitary practices, extreme climate variations and geographical area (4,15).

Our study also shows more preponderance of intestinal parasite among male patients than the female (Male: Female ratio: 3.3:1) (Table

1) which shows similar pattern seen in other studies done at Rohtak, Haryana etc. (16,17,18). This might be due to high seeking behavior among males but avoiding tendency of health facilities among females is higher.

In our study, maximum prevalence of intestinal parasite was seen in the age group of 30-39 years and least prevalence in extreme age group of above 70 years old (Table 3). However this facts goes against the other studies where maximum prevalence were seen in the age group of 0-10 years (4,7,15,29). This low prevalence in our study in children might be either due to effective

deworming programme or due to less OPD visits of this age group patient.

In our study, among the etiological causes of intestinal parasites; *Giardia lamblia* (37.74%) was the most common isolates, followed by *Blastocystis hominis* (18.87%) and *Entamoeba hystolytica* (9.44%), which seems similar findings with other studies (4).

This study showed 5 cases (9.43%) of mixed infection, which was in concordance with study at Bihar (7). Few studies showed high prevalence of mixed parasitic infection while other showed low prevalence (4).

Table.1 Prevalence of intestinal parasites in stool among suspected patients (n-1078)

	Frequency
Positive	53
Negative	1025
Total	1078

Table.2 Gender wise distribution of infected patients with intestinal parasites (n-53)

	Frequency	Percentage
Male	43	81.13
Female	13	24.53
Total	53	

Table.3 Age wise distribution of infected patients with intestinal parasites (n-53)

	Frequency	Percentage
0-9	4	7.55
10-19	2	3.77
20-29	9	16.98
30-39	12	22.64
40-49	9	16.98
50-59	6	11.32
60-69	4	7.55
70-79	1	1.88
80-89	1	1.88
Total	53	

Table.4 Distribution of parasites isolated from the infected cases (n-53)

	Frequency	Percentage
<i>Giardia</i>	20	37.74
<i>Blastocystis hominis</i>	10	18.87
<i>Entamoeba histolytica</i>	5	9.44
<i>Entamoeba hartmanni</i>	2	3.77
<i>Cryptosporidium</i>	2	3.77
<i>Strongyloides</i>	2	3.77
<i>H. nana</i>	2	3.77
<i>Hookworm</i>	2	3.77
<i>Taenia</i>	1	1.89
<i>Entamoeba coli</i>	1	1.89
<i>Entamoeba hystolytica</i> + <i>Entamoeba coli</i>	1	1.89
<i>Entamoeba hartmanni</i> + <i>Blastocystis hominis</i>	1	1.89
<i>Entamoeba hystolytica</i> + <i>Entamoeba coli</i>	1	1.89
<i>Entamoeba coli</i> + <i>Blastocystis</i> <i>hominis</i>	1	1.89
<i>Hookworm</i> + <i>Enterobius</i>	1	1.89
Total	53	

Table.5 Frequency of parasite associated with anemia (n-53)

	Frequency	Percentage
Mild	36	67.9
Moderate	7	13.20
Severe	5	9.43
Life threatening	5	9.43
Total	53	

In conclusion, the study done by Kotian *et al.*, 2014 that the prevalence of intestinal parasites in the general population of hilly regions of Uttarakhand was found to be 11.62% which is in concordance with the studies from Puducherry by Rangunathan *et al.*, and from Lathur by Davane *et al.*, Various studies have shown that prevalence rate in India ranges from 12.5% to 66% with varying prevalence for individual parasites [20,21,22,23] The wide variation in the magnitude of intestinal parasites may be due to variations in factors

like sanitation, quality of drinking water supply and various climatic factors. In our study, *Giardia* and *Entamoeba* were the common isolates, which imitate the habit of defecation in open places and insufficiency of knowledge of sanitation among people. It also requires enormous importance for the exact diagnosis of parasitic infection cases as treatment protocol varies in different age group. Further research studies can be done on treatment aspects of intestinal parasites, detection of asymptomatic cases of intestinal

parasites in the community, which helps in knowing the exact magnitude of prevalence thus helping in drafting better preventive policy much better at administration level. Research on other aspects like hygiene practices of different age group persons and different occupations that usually affects the incidence of the intestinal parasitic infection which will help in better structuring of public awareness programme.

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